Bypass SVT for non-SVT triggers

From L1 bits we know if SVT will not be used in L2 triggers.

- Standard data processing in SVT:
  - Skip road finding in AM: no tracks in output, fitting time is saved
  - SVT has still to process all the hits. ~18

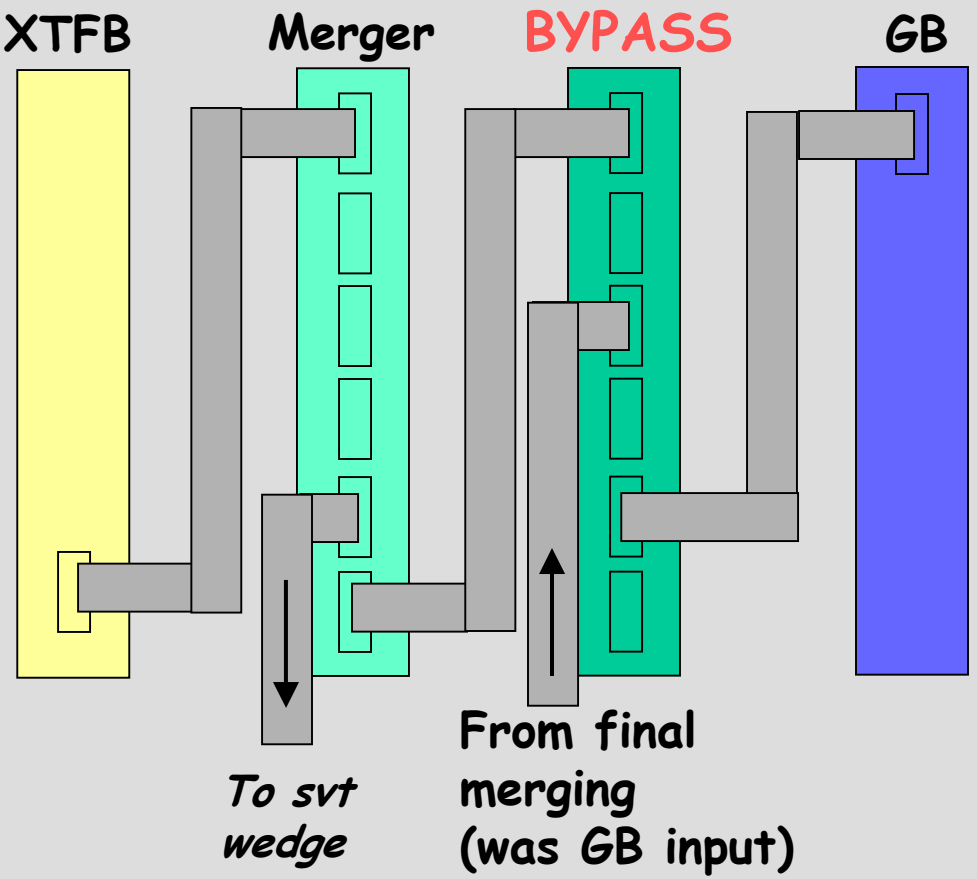
- The idea (by Jonathan) is:
  - SVT sends out the EE word right away (as soon as it receives L1 info); afterwards it processes the hits and discards them.
  - This means we send EndEvent to level2 while SVT is still processing data.

How is it implemented?

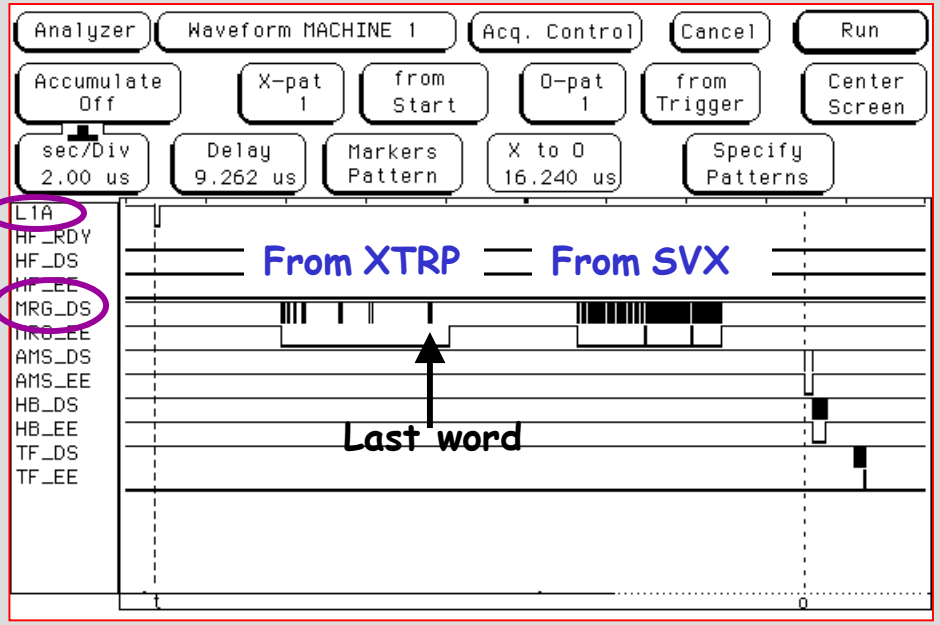
The idea is to bypass SVT when it is not used in L2: lets do it from XTFA to GB

- A new board, the SVT BYPASS, is used (it is just a Merger with new firmware):

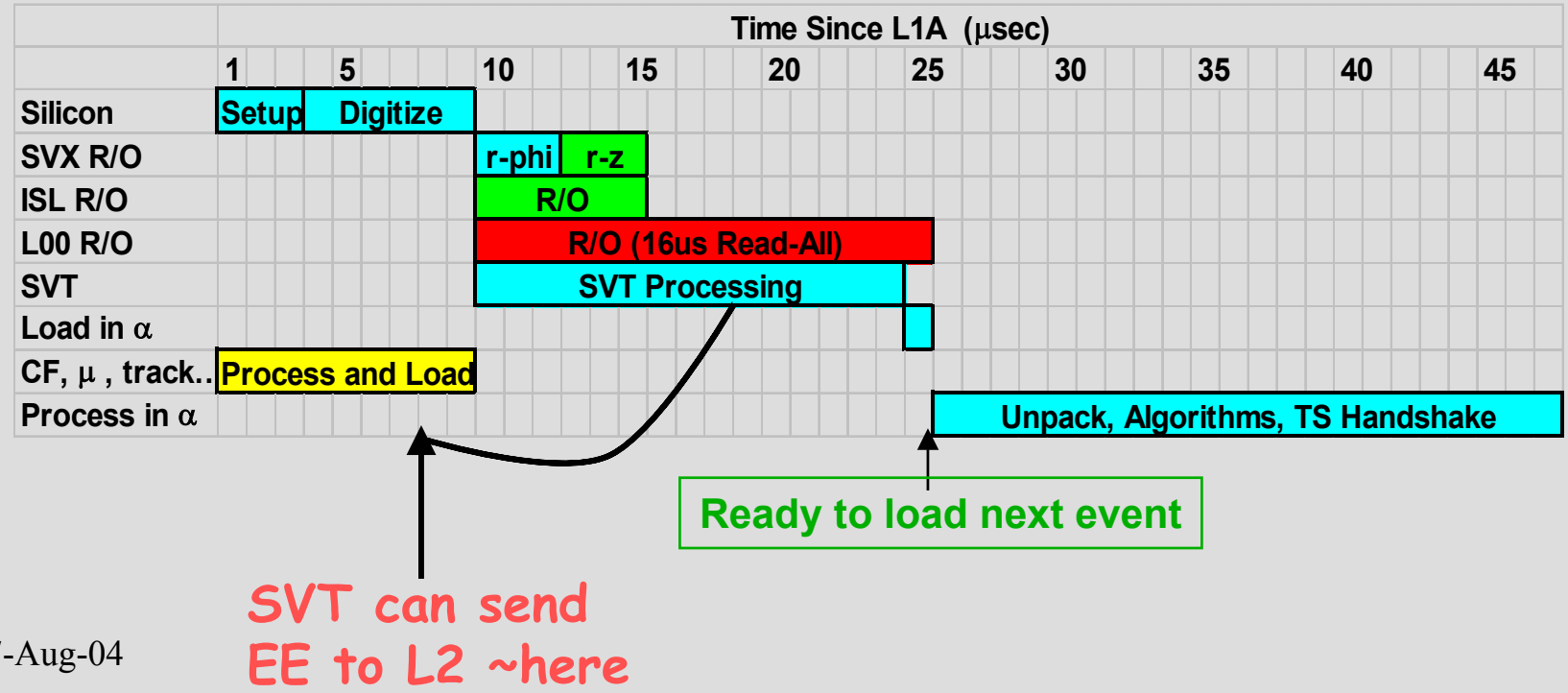
BYPASS at work:



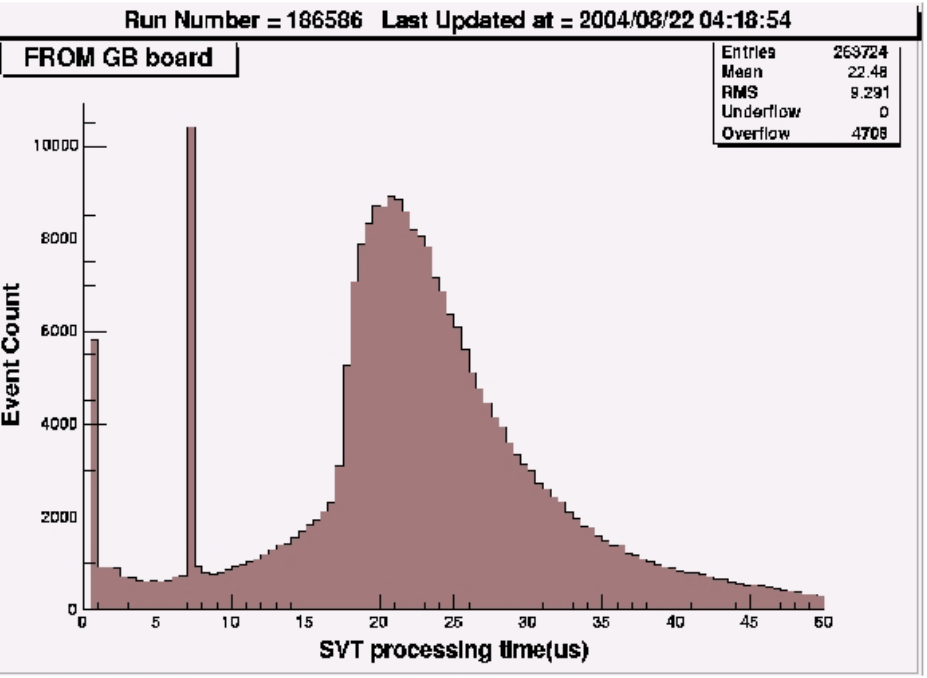
Timing at the Merger after the HitFinders

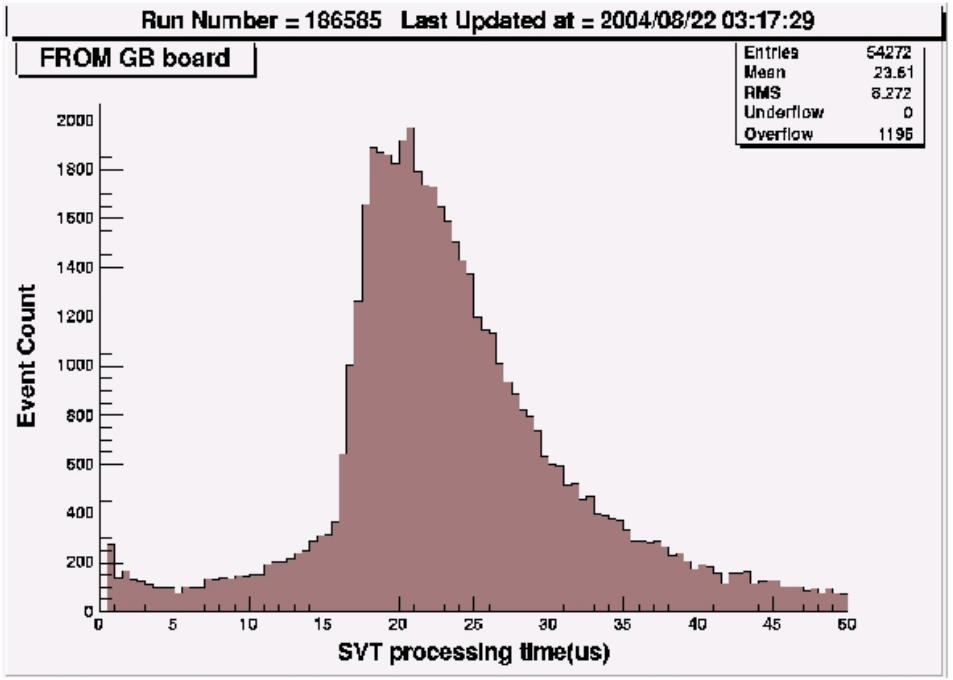


L2 Timing:



SVT Timing





With BYPASS board

Standard Configuration

Remarks

- SVT people worry:
  - ✓ a modification in the original SVT architecture is introduced which leads to the possibility of Lost Sync.
  - ✓ We implemented: CDF_ERROR is set if we get fifo overflows.

- Lost Sync of SVT if the L2R arrives before SVX digitization?? → SVT gets no SVX data (Jonathan)
  - ✓ will probably be studied during shutdown
  - ✓ the Pulsar could be patched to avoid this situation

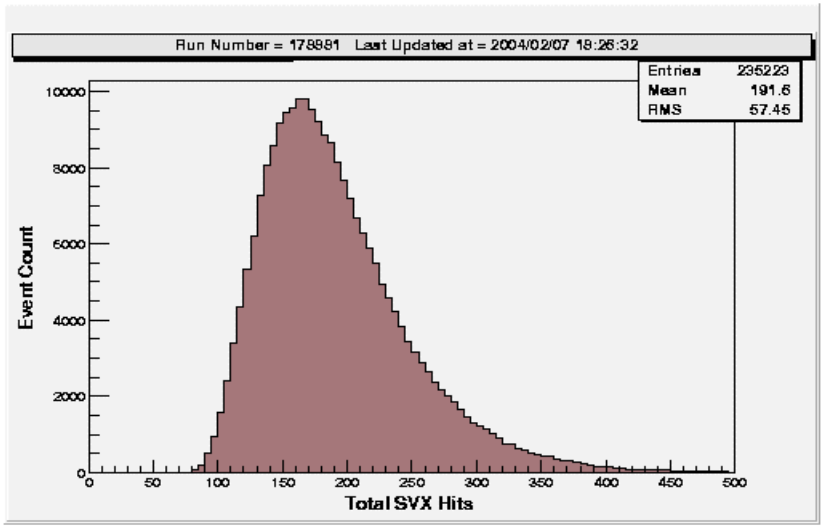
Conclusions

- SVT is planning to run with the BYPASS board from now on.

- We'll check better the effect of the Bypass on the CDF trigger when we'll get high luminosity.

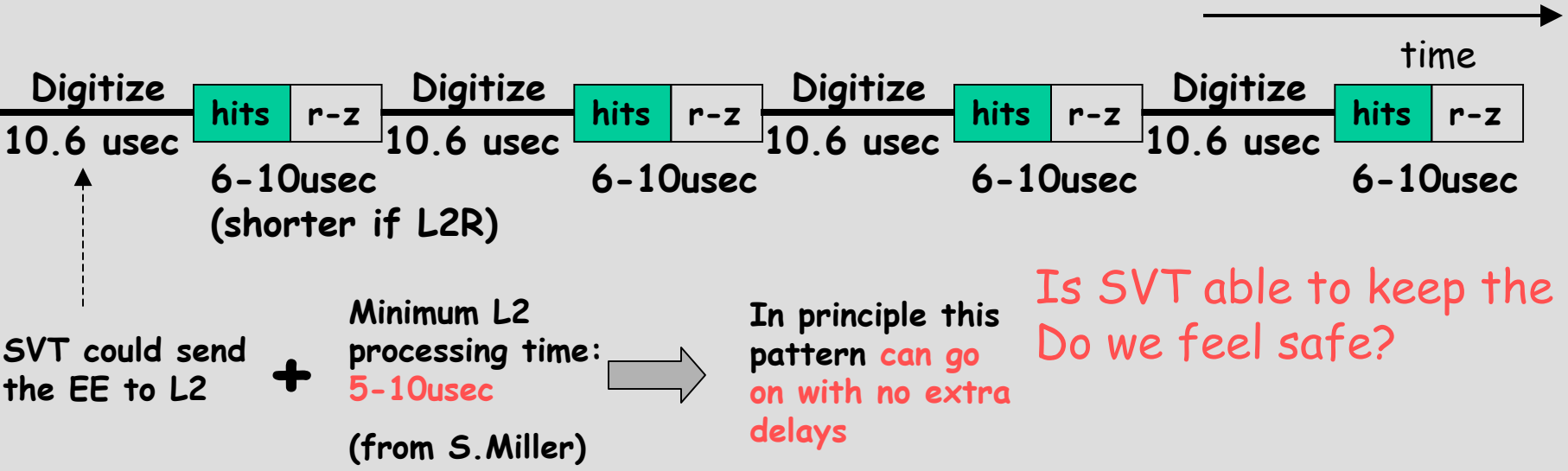
- Some care must be taken to avoid or to be able to detect possible Lost Syns in SVT.

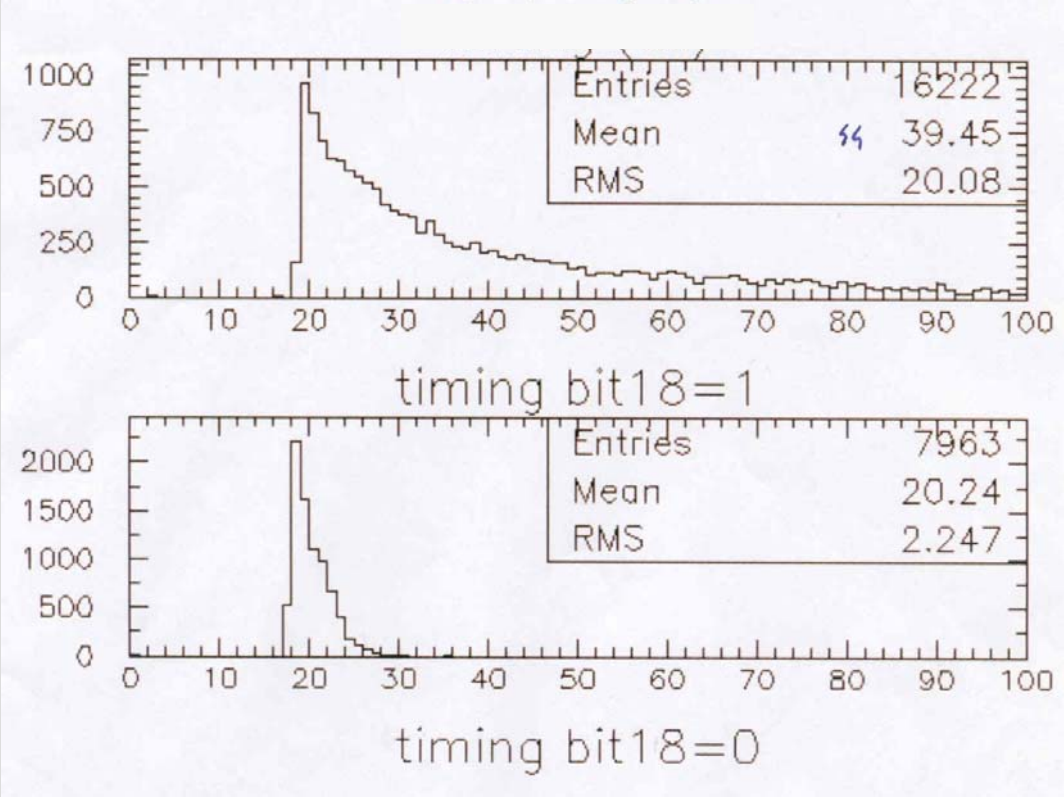
BACKUP SLIDES



	200 hits T(usec)	500 hits T(usec)
Merger 33MHz	6	15
HB 23MHz (44ns)	8.8	22

I expect SVX data to arrive at SVT with this pattern (4 L1A in a raw):




Entries 16222
Mean 39.45
RMS 20.08
timing bit18=1
Entries 7963
Mean 20.24
RMS 2.247
timing bit18=0